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ABSTRACT

The present study attempted to discover if significant differences in grade distributions occurred in certain accounting courses taught on a multiple section basis at Johnson & Wales College during the academic years 1972-1973 and 1973-1974. All multiple section courses for the above mentioned years were identified and grade distributions prepared. Analysis was made of multiple section courses taught with gaps (free periods) occurring between and multiple section courses taught directly back to back. The statistical analysis employed (Z-test) revealed very few significant differences in grade distributions for courses taught on a multiple section basis. (Author)

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A STUDY TO DETERMINE THE TEACHING EFFECTIVENESS OF FACULTY IN COURSES TAUGHT ON A MULTIPLE SECTION BASIS

PRACTICUM FOR THE CURRICULUM AND INSTRUCTION MODULE

by

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A PRACTICUM PRESENTED TO NOVA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF EDUCATION

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ABSTRACT

The present study attempted to discover if significant differences in grade distributions occurred in certain accounting courses taught on a multiple section basis at Johnson & Wales College during the academic years 1972-1973 and 1973-1974.

All multiple section courses for the above mentioned years were identified and grade distributions prepared. Analysis was made of multiple section courses taught with gaps (free periods) occurring between and multiple section courses taught directly back to back.

The statistical analysis employed (Z-test) revealed very few significant differences in grade distributions for courses taught on a multiple section basis.

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TITLE

A Study to Determine the Teaching Effectiveness of Faculty in Courses Taught on a Multiple Section Basis.

STATEMENT OF THE PROBLEM

As a private business college, Johnson & Wales College must be concerned with utilizing its manpower to the best possible advantage. This involves strict control on course offerings and the control of faculty schedules with respect to teaching assignments. It is not uncommon to find several faculty members teaching two or more different courses during a trimester. In addition, faculty members are very often called upon to teach courses on a multiple section basis.

Considering the fact that certain faculty members are teaching the same course two and possibly three different times in the same class day, one cannot help but be concerned about the effects of such teaching assignments. What are the effects on the instructor as a result of teaching the same subject matter a multiple number of times in the same day? What are the effects on student achievement as a result of faculty teaching courses on a multiple section basis?

The problem, therefore, is to determine the possible effects on student achievement, using grades as the criteria, in courses which are taught on a multiple section basis.

NULL HYPOTHESES

With the preceeding thoughts in mind, the purpose of this research study will be to prove that .....

(1) there is no significant difference in student achievement between initial back to back multiple section courses and single section courses;

(2) there is no significant difference in student achievement between secondary back to back multiple section courses and single section courses;

(3) there is no significant difference in student achievement between initial back to back multiple section courses and secondary back to back multiple section courses;

(4) there is no significant difference in student achievement between initial gapped multiple section courses and secondary gapped multiple section courses;

(5) there is no significant difference in student achievement between all gapped multiple section courses and all back to back multiple section courses;

(6) there is no significant difference in student achievement between courses taught on a gapped multiple section basis and the cumulative accounting department average for the same period;

(7) there is no significant difference in student achievement between courses taught on a back to back multiple section basis and the cumulative accounting department average for the same period.

BACKGROUND AND SIGNIFICANCE

The literature in the field of education was reviewed in order to substantiate the need for the present study. Unfortunately, no studies were found which related to the present study. A number of studies were found related to faculty evaluation. None of the studies attempted to determine the effects of faculty teaching in multiple section courses. This fact, in itself, appears to point up the need for relevant research in the area.

From an institutional point of view, many discussions were held between this writer and the faculty of the accounting department at Johnson & Wales College concerning the present study. Informal surveys were taken and the conclusion reached that a vast difference of opinion exists amongst faculty concerning their effectiveness in courses which they teach on a multiple section basis. Some faculty felt they were more effective in multiple section courses and others felt that they became bored and stale.

Therefore, the present study is being undertaken from an institutional point of view. The need for relevant research concerning the effectiveness of faculty in multiple section courses is evident at Johnson & Wales College.

DEFINITION OF TERMS

For the purpose of this study the following terms will be used consistently:

(1) multiple section - the same course taught by one faculty member two or more times in the same day;

(2) back to back sections - multiple section courses taught directly after one another in the same class day;

(3) gapped sections - multiple section courses taught with either an alternate course or free period intervening;

(4) trimester - an arrangement of the college calendar into three equal eleven week sessions.

LIMITATIONS OF THE STUDY

The study is intended to determine if grade distributions in courses taught on a multiple section basis are significantly different than those courses taught on a single section basis. Further, the study attempts to determine if significant differences in grade distributions occur between all courses taught on a multiple section basis and the cumulative accounting average for the same period.

The data for the study was obtained from students enrolled in accounting courses at Johnson & Wales College. Therefore, the results pertain only to those students enrolled in the accounting department courses for the periods 1972-1973 and 1973-1974.

In addition, the purpose of the study is not to infer causality, but only to determine if significant differences in grade distributions are present. There is a wide range of possibilities which could account for possible significant differences which are completely out of the realm of this study.

BASIC ASSUMPTIONS

The basic assumption in the study is concerned with the background and abilities of students enrolled in the courses being examined.

The scheduling of students to the courses in the accounting curriculum is done by the registrar's office. Students do not select class times nor do they have much latitude in course selection. Therefore, all students have an equal chance of being assigned to the different courses.

The assumption is made, therefore, that each course section is composed of students with comparable abilities due to the fact that the sections are randomly assigned.

PROCEDURES FOR COLLECTING DATA

The initial step in the collection of data involved the identification of all courses taught on a multiple section basis and comparable courses taught on a single section basis in the department of accounting for the academic years 1972-1973 and 1973-1974. In total fifty-one multiple and single section courses were identified. This information was gathered by securing a copy of the master class schedule from the office of the registrar.

Secondly, individual class rosters had to be secured in order to compile the various grade distributions. This proved to be a tedious process due to the fact that the college does not retain class rosters and grades on the computer beyond one trimester. Therefore, each instructor had to be contacted and copies of all previous class rosters made.

The third step in the gathering of data involved the analysis of grades in all sections determined to be multiple sections and single sections.

Finally, all courses were grouped according to the following designations:

(1) B_1 - back to back multiple section courses taught initially;

(2) B_2 - back to back multiple section courses taught secondly;

(3) G_1 - gapped multiple section courses taught initially;

(4) G_2 - gapped multiple section courses taught secondly;

(5) S - all courses similiar to multiple section courses but taught on a single section basis.

TREATMENT OF THE DATA

Following the collection of data and the calculation of grade distributions the following comparisons were made:

(1) all initial back to back multiple sections were compared to all secondary back to back multiple sections ($B_1 - B_2$);

(2) all initial gapped multiple sections were compared to all secondary gapped multiple sections ($G_1 - G_2$);

(3) all initial back to back multiple sections were compared to all single courses ($B_1 - S$);

(4) all secondary back to back multiple sections were compared to all single courses ($B_2 - S$);

(5) all initial gapped multiple section courses were compared to all single courses ($G_1 - S$);

(6) all secondary gapped multiple section courses were compared to all single courses ($G_2 - S$);

(7) all gapped multiple sections were compared to all back to back multiple section courses ($G - B$);

(8) all initial back to back multiple section courses were compared to the cumulative accounting department average;

(9) all secondary back to back multiple section courses were compared to the cumulative accounting department average;

(10) all initial gapped multiple section courses were compared to the cumulative accounting department average;

(11) all secondary gapped multiple section courses were compared to the cumulative accounting department average;

In order to determine if the differences between grade distributions in each of the above comparisons was statistically significant a Z-test was used for each letter grade. In total fifty-five Z values were computed. The following formula was used to determine the Z value:

$$Z = \frac{P_1 - P_2}{\sqrt{\frac{\overline{P\,Q}}{N_1} + \frac{\overline{P\,Q}}{N_2}}}$$

where: P_1 = grade proportion from population 1

P_2 = grade proportion from population 2

$$\overline{P\,Q} = \frac{\#\text{ grades in } P_1 + \#\text{ grades in } P_2}{N_1 + N_2} \quad X\ 1 - P_1$$

N_1 = total number of each grade - population 1

N_2 = total number of each grade - population 2

DATA RESULTING FROM STUDY

Table 1 below contains an analysis of grades between initial back to back multiple section courses and secondary back to back multiple section courses. It is obvious that the grade distributions are somewhat similiar. Z values are indicated to the right of the analysis. None of the computed Z values were found to be significant.

TABLE 1: COMPARISON OF GRADE DISTRIBUTIONS IN INITIAL BACK TO BACK MULTIPLE SECTION COURSES AND SECONDARY BACK TO BACK MULTIPLE SECTION COURSES.

GRADES	B_1 NO.	%	B_2 NO.	%	Z
A	91	17.7	102	21.3	.45
B	143	27.8	107	22.2	.71
C	155	30.2	145	30.2	0
D	73	14.2	64	13.3	.45
F	52	10.1	62	12.9	1.40
TOTALS	514	100.00	480	100.00	

In Table 2 an analysis of grades in gapped multiple section courses was made. Again, the grade distributions in the gapped sections are quite similiar in distribution to the back to back sections. The analysis revealed, however, a significant difference in C grades. The computed Z value was 2.26 which was highly significant at the .05 level.

TABLE 2: COMPARISON OF GRADE DISTRIBUTIONS IN INITIAL GAPPED MULTIPLE SECTIONS COURSES AND SECONDARY GAPPED MULTIPLE SECTION COURSES.

	G_1		G_2		
GRADES	NO.	%	NO.	%	Z
A	7	15.5	6	15.0	.06
B	13	28.9	14	35.0	.59
C	12	26.7	12	30.0	.03
D	5	11.1	0	0	2.26
F	8	17.8	8	20.0	.26
TOTALS	45	100.00	40	100.00	

Table 3. on the next page represents grades in the initial back to back multiple section courses compared to the same courses taught on a single section basis. In this comparison a significantly higher proportion of A grades were earned in the single sections as opposed

to the initial back to back multiple section courses. The computed A value was 2.43, which was highly significant at the .05 level.

TABLE 3: COMPARISON OF GRADE DISTRIBUTIONS IN INITIAL BACK TO BACK MULTIPLE SECTION COURSES AND COMPARABLE SINGLE SECTION COURSES.

	B_1		S		
GRADES	NO.	%	NO.	%	Z
A	91	17.7	35	27.1	2.43
B	143	27.8	31	24.0	.89
C	155	30.2	29	22.5	1.82
D	73	14.2	22	17.0	1.40
F	52	10.1	12	9.3	.30
TOTALS	514	100.00	129	100.00	

Secondary back to back multiple section courses were compared to single section courses in Table 4. In this comparison a significantly higher proportion of C grades was earned in the back to back sections as opposed to the comparable single section courses. Just the opposite occurred with respect to D grades. There was a significantly higher proportion of D grades earned in the single section courses as opposed to the back to back sections.

The computed Z value for the comparison of C grades was 1.77, which was significant at the .05 level. The computed Z value of the D grades was 1.85, which was also significant at the .05 level. Table 4 appears below.

TABLE 4: COMPARISON OF GRADE DISTRIBUTIONS IN SECONDARY BACK TO BACK MULTIPLE SECTION COURSES AND COMPARABLE SINGLE SECTION COURSES.

GRADES	B_2 NO.	%	S NO.	%	Z
A	102	21.3	35	27.1	1.37
B	107	22.3	31	24.0	.43
C	145	30.2	29	22.5	1.77
D	64	13.3	22	17.0	1.85
F	62	12.9	12	9.3	1.14
TOTALS	480	100.00	129	100.00	

When comparing gapped multiple section courses the following observations may be made:

(1) no significant differences occurred in the grade distributions between initial gapped multiple section courses and single section courses (Table 5);

(2) there was a significantly higher proportion of D grades earned in single section courses as opposed to secondary gapped multiple section courses (Table 6);

(3) there was a significantly higher proportion of failures in secondary gapped section compared with single section courses (Table 6).

TABLE 5: COMPARISON OF GRADE DISTRIBUTIONS IN INITIAL GAPPED MULTIPLE SECTION COURSES AND SINGLE SECTION COURSES.

GRADES	G_1 NO.	%	S NO.	%	Z
A	7	15.5	35	27.1	.21
B	13	28.9	31	24.0	.58
C	12	26.7	29	22.5	.59
D	5	11.1	22	17.0	.93
F	8	17.8	12	9.3	1.64
TOTALS	45	100.00	129	100.00	

TABLE 6: COMPARISON OF GRADE DISTRIBUTIONS IN SECONDARY GAPPED MULTIPLE SECTION COURSES AND COMPARABLE SINGLE SECTION COURSES.

GRADES	G_2 NO.	%	S NO.	%	Z
A	6	15.0	35	27.1	1.49
B	14	35.0	31	24.0	1.47
C	12	30.0	29	22.5	1.01
D	0	0	22	17.0	2.62
F	8	20.0	12	9.3	1.98
TOTALS	40	100.00	129	100.00	

In Table 7 all gapped sections were compared to all back to back sections. This comparison produces three statistically significant differences:

(1) the computed Z value of A grades was significant at the .05 level;

(2) the computed Z value of D grades was significant at the .05 level;

(3) the computed Z value of F grades was significant at the .05 level.

In other words, there was a significantly higher proportion of A grades earned in back to back multiple section courses as opposed to gapped multiple section courses. Also, there was a significantly higher proportion of D grades earned in the back to back multiple sections. In the gapped multiple section courses a significantly higher proportion of failures occurred compared to the back to back sections.

TABLE 7: COMPARISON OF GRADE DISTRIBUTIONS IN ALL GAPPED MULTIPLE SECTIONS COURSES AND ALL BACK TO BACK MULTIPLE SECTION COURSES.

	G		B		
GRADES	NO.	%	NO.	%	Z
A	13	15.3	193	19.4	2.91
B	27	31.8	250	25.2	1.44
C	24	26.2	300	30.2	.76
D	5	5.9	137	13.8	2.04
F	16	18.8	114	11.4	1.97
TOTALS	85	100.00	994	100.00	

TABLE 9: COMPARISON OF GRADE DISTRIBUTIONS IN SECONDARY BACK TO BACK MULTIPLE SECTION COURSES AND CUMULATIVE ACCOUNTING DEPARTMENT AVERAGE.

GRADES	B_2 NO.	%	AVERAGE NO.	%	Z
A	102	21.3	321	19.0	1.16
B	107	22.3	407	25.0	1.35
C	145	30.2	474	29.0	.54
D	64	13.3	199	12.0	.80
F	62	12.9	212	13.0	.08
TOTALS	480	100.00	1613	100.00	

TABLE 10: COMPARISON OF GRADE DISTRIBUTIONS IN INITIAL GAPPED MULTIPLE SECTION COURSES AND CUMULATIVE ACCOUNTING DEPARTMENT AVERAGE.

GRADES	G_1 NO.	%	AVERAGE NO.	%	Z
A	7	15.5	321	19.0	.57
B	13	28.9	407	25.0	.61
C	12	26.7	474	29.0	.33
D	0	11.1	199	12.0	.18
F	8	17.8	212	13.0	.98
TOTALS	40	100.00	1613	100.00	

Table 8, 9, 10 and 11 all compare back to back multiple section courses and gapped multiple section courses to the cumulative grade distribution of all courses in the accounting department for the same periods. In this comparison only one statistically significant difference occurred. This difference appears in Table 11 where secondary gapped multiple section courses were compared to the cumulative accounting department averages. The computed Z value for D grades was 2.18. This was found to be significant at the .05 level.

TABLE 8: COMPARISON OF GRADE DISTRIBUTIONS IN INITIAL BACK TO BACK MULTIPLE SECTION COURSES AND CUMULATIVE ACCOUNTING DEPARTMENT AVERAGE.

GRADES	B_1 NO.	%	AVERAGE NO.	%	Z
A	91	17.7	321	19.0	.65
B	143	27.8	407	25.0	1.40
C	155	30.2	474	29.0	.54
D	73	14.2	199	12.0	1.35
F	52	10.1	212	13.0	1.77
TOTALS	514	100.00	1613	100.00	

TABLE 11: COMPARISON OF SECONDARY GAPPED MULTIPLE SECTION COURSES AND CUMULATIVE ACCOUNTING DEPARTMENT AVERAGE.

	G_2		AVERAGE		
GRADES	NO.	%	NO.	%	Z
A	6	15.0	321	19.0	.62
B	14	35.0	407	25.0	1.56
C	12	30.0	474	29.0	.14
D	0	0	199	12.0	2.18
F	8	20.0	212	13.0	.99
TOTALS	40	100.00	1613	100.00	

SIGNIFICANCE OF DATA

The analysis made of grade distributions allows us to reach conclusions concerning the null hypotheses of the study. The analysis has supported hypotheses numbers one, two, three, four, six and seven. Therefore, there has been a failure to reject that:

(1) there is no significant difference in student achievement between initial back to back multiple section courses and single section courses;

(2) there is no significant difference in student achievement between secondary back to back multiple section courses and single section courses;

(3) there is no significant difference in student achievement between initial back to back multiple section courses and secondary back to back multiple section courses;

(4) there is no significant difference in student achievement between initial gapped multiple section courses and secondary gapped multiple section courses;

(5) there is no significant difference in student achievement between courses taught on a gapped multiple section basis and the cumulative accounting average for the same period;

(6) there is no significant difference in student achievement between courses taught on a back to back multiple section basis and the cumulative accounting department average for the same period.

The analysis has not supported hypothesis number seven and therefore, the following hypothesis is rejected:

> there is no significant difference in student achievement between all gapped multiple section courses and all back to back multiple section courses.

RECOMMENDATIONS

When the present practicum was initially proposed it was hoped that the results would enable more efficient utilization of faculty members. Unfortunately, the amount of statistical analysis required prevented the results from being presented to the registrar and department chairman in time to have an effect on teaching assignment for the upcoming semester. It is hoped that the results of the study will be reviewed with an eye towards future teaching assignments.

A copy of the study will be made available to the registrar and the chairman of the accounting department with the hope that it will stimulate discussion and possible future research. In addition, it is hoped that the results of this study will be an incentive towards other research on the possible effects of multiple section courses other than student achievement. Other factors such as fatigue, interferance of other subject matter, boredom and omission need to be studied in order to determine the frequency of their occurrence in multiple section courses as opposed to single section courses.

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